

Kentucky Land-Use Planning on the Web

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INTRODUCTION

Since 1996, the Kentucky Geological Survey (KGS) has been converting 707 7.5-minute geologic maps into digital formats. As that effort nears completion, attention is turning to a variety of uses for the newly created digital data. One of those uses is the creation of new compiled map series. A 1:100,000-scale, 30 x 60 minute map series and a 1:62,500-scale county map series have been initiated. The new maps have the benefit of regional perspective with the fidelity of 1:24,000-scale detail provided by the larger-scale source data.

The digitally formatted map data also permit creation of derivative maps that portray selective properties of the geology for special applications. For example, by relating information about the solubility of limestone units, maps of karst potential can be made for transportation or community planners. The derivative maps have an advantage over traditional geologic maps in that they are simpler to understand and they relate the geologic information with terminology that is appropriate to the user community. As in most states, land-use planning is an increasingly important issue in Kentucky, and geologic input is of critical importance. KGS is developing data related to geologic map units to support land-use assessments and is using Internet mapping services to provide these data to end users.

LAND-USE PLANNING

The target users for land-use information typically are nongeologists with a variety of specialized backgrounds. Many are members of planning councils who may have training in planning, while others are land developers or lay citizen members. The diverse backgrounds of these users make it a challenge to communicate geologic issues and information on geologic maps. Common sense dictates the preparation of simple maps that highlight information about particular issues. A good analog for

this type of service is the National Resources Conservation Service (NRCS) digital soils data (SSURGO) <www.ky.nrcs.usda.gov/technical/GIS/index.html>. NRCS has developed extensive databases about the characteristics of soil units that can be used to make derivative maps for a host of problems, using the soil map units as a base.

A geologic engineering report for Fayette County, Ky. (Johnson, 1966) used a philosophy similar to the NRCS model, and KGS has used this report as a basis for developing Web services for land-use planning from the digital geologic map data.

MAP DEVELOPMENT

One of the goals in preparing the land-use maps is to simplify terminology. Most of the users are unfamiliar with the specialized technical jargon found on geologic maps. Therefore, the first step is to reclassify the map units into rock type designations that are meaningful to the user (for example, a simple classification based on lithologic characteristics). This task requires an analysis of the original map unit descriptions, review of pertinent literature, and field inspection in local areas for which the maps are being made. The second task is to determine what the most important land-use issues are for the map area (in this map series, counties). Local experts, such as the NRCS field agents or practicing geologists, are consulted to create a suitability classification for a spectrum of applications. Examples of applications are suitability for septic systems or difficulty of excavation for building foundations and basements.

INTERNET MAP SERVICE

The county land-use maps were originally formatted as print-on-demand publications. It soon became clear that delivery of the information on the Internet would decrease publication time and greatly enhance the ability

to link to additional resources. A draft ArcIMS Internet map service <<http://kgsweb.uky.edu/arcimsSearch.asp>> has been developed that integrates the reclassified geologic map data with soils data. The map service also provides functions that enable users to zoom to an area of interest, then link to other map services (such as water well locations) available for the same area. Additional

resources are provided that explain the role of geology in land-use planning.

REFERENCES

- Johnson, C.G., 1966, Engineering geology of the Lexington and Fayette County, Kentucky, area: U.S. Geological Survey Open File Report, 32 p.